

# BOAT FOLD-AWAY TRANSPORT PLATFORM

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## TECHNICAL FIELD

The invention generally pertains to platforms, and more specifically to an outward-extending platform on a boat that folds into the boat when not in use, and that is  
10 utilized for transporting items, such as canoes, sail boards, inflatable boats and the like.

## BACKGROUND ART

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Previously, many types of collapsible platforms have been used to provide an effective means for storing goods and large items by extending the length or size of a storage area. In most cases, the platforms consist of detachable truck bed extension, especially for pickup trucks.

20 A search of prior art did not disclose any patents that possess the novelty of the instant invention and no boat platforms, other than hull extensions, were found. However, the following U.S. patents are considered related:

	<u>Patent Number</u>	<u>Inventor</u>	<u>Issue Date</u>
25	4,020,957	Wren	May 3, 1977
	4,474,131	Buirski	Oct. 2, 1984
	4,519,336	Mason	May 28, 1985
	5,755,480	Bryan	May 26, 1998
	6,422,627	Kuhn et al.	Jul. 23, 2002
30	6,648,391	Whiteford et al.	Nov. 18, 2003

Wren in U.S. patent 4,020,957 teaches a detachable truck bed extension and loading ramp that is attached to the rear edge of a truck bed. Two triangular upper sections fold over lower triangular sections to provide a ramp for equipment transported in the truck.

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Patent No. 4,474,131 issued to Buirski is for a convertible boat/canopy adapted to be used as a partial boat hull or a vehicle canopy. Two longitudinal walls define opposite ends of the invention, with end walls defining a gunwale. At least one extension secures one of the end walls and includes mechanical interconnectors for releasably securing the wall forming the partial boat hull.

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Mason in U.S. patent 4,519,336 discloses an attachment that creates a rearward extension of a boat hull. The attachment is secured to a transom of the boat to form an extension of an underside portion of the hull. A forward portion of the hull extension is pivotally connected to the transom, thus allowing pivotation for cruising and rough weather conditions. A hydraulic piston and cylinder device provides the pivotation of the hollow body.

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Bryan in U.S. patent 5,755,480 teaches a truck bed extension for pickup truck having a pair of cleats and brackets to facilitate loading and unloading the extension, which is mounted on the rear end of the pickup truck bed. The extension includes a frame with side members, and tailgate brackets that engage a latching pin on the truck. An extended tailgate is included that completely closes the rear portion of the extension.

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Patent No. 6,422,627 issued to Kuhn, et al is for an extension apparatus for enclosing a vehicle storage area. The apparatus utilizes using a bracket and frame construction to provide a foldable, lightweight extension device.

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Whiteford, et al in U.S. patent 6,648,391 discloses a truck bed extension device for use with a truck that allows items to be carried beyond the overhang of the truck bed. The device consists of a deck support structure and a signaling system. In a second embodiment a truck hitch structure is used for coupling the truck to a trailer.

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For background purposes and as indicative of the art to which the invention is related reference may be made to the remaining cited patent issued to Bauer in U.S. patent 6,435,588.

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### DISCLOSURE OF THE INVENTION

Pleasure craft normally include very little spare area for storage of large items such as canoes, sail boards, inflatable boats etc. which are often the same length as the width of typical motor-powered boat. Therefore the primary object of the invention is to provide a simple overhanging transport platform for carrying and stowing large bulky items while a boat is in use.

It is desirable in many instances to have one or more smaller watercraft along for other sporting purposes while using a larger boat for transportation. An important object of the invention therefore allows this type of watercraft to be carried and stored out of the way, without affecting the boat's original functional operation or using space meant for other purposes.

Another object of the invention is that when the boat is moored with no smaller watercraft stored on the platform, the entire structure may be rotated into a storage position within the boat itself. This situation is easily accomplished by merely removing a clevis pin from each hinge bracket attached to the boat transom and manually lifting the platform, which arcs into the boat until the platform rests on the deck.

Still another object of the invention is realized during storage, when the platform is collapsed, as it is isolated within the boat and does not prevent normal covering of the boat for weather protection.

The platform is fabricated of welded metal tubing which is lightweight, strong and relatively inexpensive.

A further object of the invention provides an extended deck area for uses other than transportation of items, such as resting, sun bathing, fishing, etc. This object is achieved with the use of an optional catamaran tarp, netting or canvas that is stretched between the outer structural members of the platform and which permits a person to walk and sit on the platform.

A final object of the invention requires only minor modification to the boat as only the pivoting hinge brackets need to be attached to the stern of the boat on the transom or railing in a conventional manner.

These and other objects and advantages of the present invention will become apparent from the subsequent detailed description of the preferred embodiment and the appended claims taken in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a partial isometric view of the preferred embodiment installed on a boat, with the boat illustrated in dotted lines.

FIGURE 2 is a partial isometric view of the preferred embodiment shown removed from the boat.

FIGURE 3 is a side view of the preferred embodiment.

FIGURE 4 is a side view of the preferred embodiment illustrated in an extended and retracted mode with the boat shown in dotted lines.

FIGURE 5 is a plan view of the preferred embodiment

FIGURE 6 is a partial cross-sectional view taken along lines 6-6 of FIGURE 5.

FIGURE 7 is a side view of one of the diagonal braces in the preferred embodiment shown removed from the invention for clarity.

FIGURE 8 is an end view of one of the diagonal braces shown removed from the invention for clarity.

5        FIGURE 9 is a partial isometric view of one of the stern pivoting hinge brackets in the preferred embodiment shown removed from the invention for clarity.

FIGURE 10 is a cross-sectional view taken along lines 10-10 of FIGURE 5 illustrating a rotatable means for attaching each brace at an upper end to a cross member.

10        FIGURE 11 is a cross-sectional view taken along lines 11-11 of FIGURE 5 illustrating a fragmentary side view of the rotatable means for attaching each brace at an upper end to a cross member.

FIGURE 12 is a partial isometric view of the preferred embodiment with an external cover consisting of netting.

15        FIGURE 13 is a partial isometric view of the preferred embodiment with an external cover consisting of canvas.

FIGURE 14 is a side view of the fold-away platform with a drop-down cross member to facilitate the use of an external cover.

FIGURE 15 is a cross-sectional view taken along lines 15-15 of FIGURE 14.

20        FIGURE 16 is a side view of the fold-away platform with extendable side supports.

FIGURE 17 is a partial isometric view of an embodiment shown by itself away from the boat having three diagonal braces for added strength.

FIGURE 18 is a side view of the fold-away platform installed on a boat transom at an angle to assure secure attachment surfaces of the platform.

25        FIGURE 19 is a side view of the fold-away platform with cross bracing between the tubular side supports and tubular cross members for additional reinforcing and structural strength.

FIGURE 20 is a partial isometric view of the fold-away platform attached to the boat stern rail of the second embodiment.

FIGURE 21 is a side view of the fold-away platform attached to the boat stern rail of the second embodiment.

FIGURE 22 is a side view of the fold-away platform attached to the boat stern rail of the second embodiment illustrated in the extended and retracted mode with the boat shown in dotted lines.

### BEST MODE FOR CARRYING OUT THE INVENTION

The best mode for carrying out the invention is presented in terms of a preferred and second embodiment for a fold-away transport platform 24. The preferred embodiment of the fold-away transport platform 24 is attached to the stern of a boat 26 and is used to transport sizeable items, such as shown in FIGURES 1 through 19, and consists of a pair of tubular side supports 28 that are pivotally attached to the boat 26. Each side support 28 has a first end 30 and a second end 32, as illustrated in FIGURES 2-6. The first end 30 of each side support 28 has a down-turned radial extremity 34 and the second end 32 is formed with an upturned radial extremity 36, as best illustrated in FIGURE 2. This configuration permits the first end 30 to extend downward into the boat 26 for attachment, while the second end 32 provides a barrier for maintaining a secure position when transporting sizeable items on the platform 24 such as canoes, sail boards, inflatable boats, and the like.

A plurality of tubular cross members 38 are positioned between the side supports 28 for structural strength and rigidity of the transport platform 24. The side supports 28 and tubular cross members 38 are preferably made of a metal composition with a weld 40 holding the supports 28 and cross members 38 together at an intersecting joint. The preferred material of the side supports 28 and tubular cross members 38 is stainless steel or aluminum. The side supports 28 and cross members 38 are preferably configured with

a round, square, polygonal or a rectangular shape, or any other structural configuration suitable for the application.

A pair of stern pivoting hinge brackets 42 are pivotally attached to an internal surface of the stern 26a and are in turn attached to the first end 30 of each side support 28, as illustrated in FIGURES 2-4, with the bracket 42 shown by itself removed from the invention in FIGURE 8. This attachment method permits the transport platform 24 to extend outward from said stern 26a and fold upward into the interior of the boat 26 for storage, as shown in FIGURE 4 in its extended and retracted, or folded over position.

The bracket 42, as illustrated in FIGURE 9, consists of a flat mounting plate 44 with provisions for being installed onto the boat transom which consists of holes 46 for mounting with threaded fasteners or the like. A pair of parallel leafs 48 are attached to the plate 44, preferably by welding, with both leafs having means for receiving the first end 30 of the tubular side supports 28, defined as holes 46, sized to receive a clevis pin 50.

A plurality of tubular diagonal braces 52 extend between one of the cross members 38 and an external surface of the boat transom 26b. Pivotal detachment means are provided for fastening the lower end of each brace to the external surface of the boat transom 26b. It has been found that two diagonal braces 52 are normally sufficient to support conventional loads, however three or more may be used when heavy loads are anticipated on the platform 24, as illustrated in FIGURE 17. The pivotal detachment means consists of the use of another pair of identical stern pivoting brackets 42 as described above and as illustrated in FIGURE 9. The diagonal braces 52 include a mating plate 54 in the ends, with a hole 46 for connection with a removable clevis pin 50.

Diagonal brace rotatable means are furnished for attaching each brace 52 at its upper end to one of the cross members 38, thereby allowing the platform 24 to be supported diagonally. When the lower end is disengaged, the fold-away transport platform 24 may be rotated into the boat 26, making use of the stern pivoting hinge brackets 42, into a position for storage and transportation.

The diagonal brace rotatable means for attaching each brace at an upper end to a cross member consists of a pair of parallel leafs 48a that are preferably attached, by welding to one of the cross members 38, with a clevis pin 50 bridged between said leafs 48a. The upper end of the diagonal brace 38, which contains another mating plate 54, has a hole 46 therein, jointly engaged by the clevis pin 50. When the platform 24 is rotated into its storage position, as depicted in FIGURE 4, the clevis pin 50 is removed and the diagonal brace 52 is free to rotate but is held by gravity in a vertical position until the side support's first ends 30 are over center. The diagonal brace 52 then slides upon one of the cross members 38 until the side supports 28 come to rest, as illustrated in the retracted position.

An external cover 56 may be stretched on top of the platform 24 for holding smaller goods and/or people. The cover 56 has a resilient surface, which preferably consists of netting, catamaran tarp or canvas. The external cover 56 is illustrated in FIGURES 12 and 13, with FIGURE 12 depicting netting and FIGURE 13 a catamaran tarp or canvas. A drop-down cross member 58 replaces a straight cross member 38 in this variation of the preferred embodiment to permit the external cover 56, which is stretched on top of the platform, to yield under weight without touching the cross member itself. The drop down cross member 58 is illustrated in FIGURES 14 and 15.

Another variation of the preferred embodiment is shown in FIGURE 16 and consists of a telescoping platform 62 that is adjustable in length of overhang, and has the side supports 28 formed in two sections, with one slipping inside the other.

Cross bracing 60 between the tubular side supports 28 and tubular cross members 38 may optionally be added for additional reinforcement and structural strength, as illustrated in FIGURE 19.

In some applications it is preferable to have the transport platform 24 angled upward from an arbitrary boat mean horizontal centerline from 5 to 10 degrees for assuring that the platform will be capable of maintaining its transported items during rough water. This angled platform variation is shown pictorially in FIGURE 18, with the alpha designation "a" representing the upward angle in degrees.



A plurality of gussets 64 may be optionally attached between the side supports 28 and the cross members 38, as illustrated in FIGURE 17, to reinforce and strengthen the platform 24. The gussets 64 are flat metallic plates in a triangular shape that are welded to the structural members at the appropriate locations.

5       The second embodiment is basically the same as the preferred embodiment except for the method of attachment of the tubular side supports 28 to the stern of the boat 26. FIGURES 20-22 illustrate this embodiment, which employs different configured side supports 28a. The first end 30a of each side support 28a is straight and said second end 32a has the same upturned radial extremity. This design causes the first end 30a to be  
10       positioned adjacent to the boat stern rail 26c. The second end 32a radial extremity provides a barrier on the distal end for maintaining a secure position when transporting sizeable items on the platform 24.

      The first ends 30a of the side supports 28a are attached to the boat stern rail 26c, as best illustrated in FIGURE 21, with the same attachment elements as the preferred  
15       embodiment in the first end 30a, except that they are rotated upward instead of inward. The stern pivoting hinge bracket 42 of the preferred embodiment is replaced by a pair of leafs 48a. The leafs 48a are attached directly to the boat stern rail 26c, similar to the diagonal brace attachment onto the cross members 38, and a clevis pin 50 provides the pivoting joint.

20       The diagonal braces 52 pivotal detachment means consists of the same stern pivoting hinge bracket 42 which is a flat mounting plate 22 with provisions for installing onto the boat transom and parallel leafs 48. The connection between the brace 52 and the bracket 42 is achieved by utilizing a removable clevis pin 52 bridged between the leafs 48. The attachment of the upper end of the diagonal braces 52 is identical to the preferred  
25       embodiment, as described above.

      It should be noted that the retraction of the platform 24 in the second embodiment is shown pictorially in FIGURE 22, and when retracted, the diagonal brace 52 rests directly on the boat stern rail 26c instead of one of the cross members 38.

While the invention has been described in complete detail and pictorially shown in the accompanying drawings, it is not to be limited to such details, since many changes and modifications may be made to the invention without departing from the spirit and scope thereof. For example, the fold-away transport platform can also be designed to be  
5 utilized on various types of land vehicles. Hence, it is described to cover any and all modifications and forms which may come within the language and scope of the appended claims.

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